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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/075,996

02/14/2002

Caroline S. Harris

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7590

07/28/2004

PPG Industries, Inc.
Intellectual Property Dept.
One PPG Place
Pittsburgh, PA 15272

EXAMINER

BLACKWELL, RUDASIL, GWENDOLYN A

ART UNIT

PAPER NUMBER

1775

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,996

Applicant(s)

HARRIS ET AL.

Examiner

Gwendolyn A. Blackwell-Rudasill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 December 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 and 54-57 is/are pending in the application.
- 4a) Of the above claim(s) 40-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39, 54-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-39 and 53, now amended to include present claims 1-39 and 57-57 in the reply filed on December 24, 2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-13 and 17-39 are rejected under 35 U.S.C. 102(a) as being anticipated by United States Patent no. 6,103,363, Boire et al.

Boire et al disclose a substrate with a hydrophilic photocatalytic film containing titanium oxide. The coating can have a "more or less smooth surface". A smooth surface can be hydrophilic with the hydrophilicity increasing with the surface roughness. The surface roughness can range from approximately 2-20 nm, "approximately" is considered the equivalent

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to “about”, with a contact angle with water being less than 1° , meeting the requirements of claims 1-5, (column 4, lines 37-64).

Boire et al also disclose that the thickness of the coating varies between 5 nm – 1 micron ($50 \text{ \AA} - 10^4 \text{ \AA}$), meeting the requirements of claims 6-10, (column 5, lines 12-13). Different materials, along with titanium dioxide, can be used for the photocatalytic coating such as silicon oxide, tin oxide, zirconium oxide, or aluminum oxide, meeting the requirements of claims 11-12, (column 2, lines 41-51). The titanium oxide can be present in a partially crystalline/amorphous state wherein the crystalline phase can be anatase, rutile, or anatase/rutile, meeting the requirements of claim 13, (column 2, lines 5-21).

Boire et al further disclose that one or more layers may be located between the substrate and the photocatalytic coating. The layers may have anti-static, thermal, or optical functions as well as forming a barrier to the migration of certain elements originating in the substrate, meeting the requirements of claims 21-22 and 33-34, (column 5, lines 20-37). The coating can be formed on the surface of float glass wherein one of the surface would have tin present on one side, meeting the requirements of claims 23 and 36-39, (column 7, lines 30-34).

Many different surfaces and configurations can have the photocatalytic coating deposited thereon. In particular, the coating can be placed upon double glazing wherein the coating can be placed on the external side and/or the internal side (face 1 and/or on face 4), as well as automotive windows, and building windows, meeting the requirements of claims 26-31 and 35, (column 6, lines 42-64).

When the structure recited in the reference is substantially identical to that of the claims, the claimed properties or function are presumed inherent. *MPEP 2112.01*. Because the prior art

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exemplifies the applicant's claimed substrate with a photo-induced, which is taken as meaning the same as photocatalyst, hydrophilic coating, the claimed physical properties relating to the photocatalytic activity and the visible light reflectance of the coating are inherently present in the prior art. As such, the addition of the claimed physical properties to the claim language fails to provide patentable distinction over the prior art absent an evidentiary showing to the contrary, meeting the requirements of claims 17-20 and 32.

Claims 1, 24-25, and 39 are product by process claim wherein the patentability of the product does not depend on its method of production. "If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *See MPEP 2113*. As such, the process limitations within claims 1, 24-25, and 39 do not provide patentable distinction over the prior art absent an evidentiary showing to the contrary.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-39 and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent no. 6,103,363, Boire et al.

Boire et al disclose a substrate with a hydrophilic photocatalytic film containing titanium oxide. The coating can have a "more or less smooth surface". A smooth surface can be hydrophilic with the hydrophilicity increasing with the surface roughness. The surface roughness can range from approximately 2-20 nm, with "approximately" being considered the equivalent of "about, with a contact angle with water being less than 1°, (column 4, lines 37-64). The thickness of the coating varies between 5 nm – 1 micron (50 Å - 10⁴ Å), (column 5, lines 12-13). Different materials, along with titanium dioxide, can be used for the photocatalytic coating such as silicon oxide, tin oxide, zirconium oxide, or aluminum oxide, (column 2, lines 41-51). The titanium oxide can be present in a partially crystalline/amorphous state wherein the crystalline phase can be anatase, rutile, or anatase/rutile, (column 2, lines 5-21). One or more layers may be located between the substrate and the photocatalytic coating. The layers may have anti-static, thermal, or optical functions as well as forming a barrier to the migration of certain elements originating in the substrate, (column 5, lines 20-37). The coating can be formed on the surface of float glass wherein one of the surface would have tin present on one side, (column 7, lines 30-34). Many different surfaces and configurations can have the photocatalytic coating deposited thereon. In particular, the coating can be placed upon double glazing wherein the coating can be placed on the external side and/or the internal side (face 1 and or on face 4), as

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well as automotive windows, and building windows, (column 6, lines 42-64). Boire et al do not specifically disclose that the surface roughness is below 1 nm, that the coating is substantially non-porous, or that the functional coating is placed on a second surface of the float glass strip.

Boire et al disclose that the photocatalytic coating can be more or less smooth and that a little roughness increases the photocatalytic aspects of the coating. In addition, the porosity of the coating is dependent to an extent on the surface roughness of the coating, (column 4, lines 37-55). Based upon the teachings of Boire et al, too rough a surface is a penalty while a smooth surface will still exhibit photocatalytic functions. As such, it would have been within the skill of one in the art at the time of invention to optimize the surface roughness of the coating through routine experimentation to obtain a coating that while having a certain roughness that will increase the wetting properties yet will not cause incrustation or accumulation of dirty marks on the film, (column 4, lines 37-55).

While Boire et al do not specifically disclose that the substrate has a photocatalytic film on one surface and a functional coating on the second surface, it is disclosed that different layers can be applied to the substrate. In addition, the coating can be applied to the interior of windows. As such, it would be with the skill of one in the art through routine experimentation to determine the appropriate placement of additional coatings for the desired final product. For example, the photocatalytic coating can go on an interior vehicle window with a solar control layer on the second surface to protect the interior of the vehicle.

Because the photocatalytic coating exhibits antibacterial, stain proofing, deodorant, or antifogging effects without impairing the appearance or outlook of a glass substrate and it is known in the art to place the coating on glass, it is within the skill of one in the art to determine

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the most appropriate surface upon which to place the coating without undue experimentation in order to obtain a coated surface that is easy to clean, per the user's preference as to placement of the coating.

Claims 1, 24-25, and 39 are product by process claims wherein the patentability of the product does not depend on its method of production. "If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *See MPEP 2113*. As such, the process limitations within claims 1, 24-25, and 39 do not provide patentable distinction over the prior art absent a showing of unexpected results between the claimed invention and the prior art.

Response to Arguments

7. Applicant's arguments, see the amendment to claims, filed December 24, 2003, with respect to claims 36-39 have been fully considered and are persuasive. The addition the limitation of the surface roughness to the claim language of present claims 36-39 removes McCurdy as 102(e) prior art. The 102(e) rejection over McCurdy of claims 36-39 has been withdrawn.

8. Applicant's arguments filed December 24, 2003 have been fully considered but they are not persuasive.

Applicant contends that Boire et al do not disclose a surface roughness of less than 2 nm. This is not held persuasive because Boire teaches that the surface roughness can range from approximately 2-20 nm, with "approximately" being considered the equivalent of "about,

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(column 4, lines 37-64). Because Boire disclose that the surface roughness can be below 2 nm, the amended limitation of the present claims that the surface roughness is less than 2 nm is met.

Based upon the comments above, the 102(a) and the 103(a) rejections of claims 1-39 stand with new claims 54-57 being included in the rejections.

9. The inclusion of Yamada and Mazzoni in the heading of the 35 USC 103(a) rejection was unintentional. The abovementioned references to Yamada and Mazzoni were not included in the body of the rejection. The 103(a) rejection based upon Boire is still applicable to the present claims.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn A. Blackwell-Rudasill whose telephone number is (571) 272-1533. The examiner can normally be reached on Monday - Thursday; 6:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gwendolyn A. Blackwell-Rudasill
Examiner
Art Unit 1775

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DEBORAH JONES
SUPERVISORY PATENT EXAMINER